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PENSOFT

EVOLUTIONARY SYSTEMATICS

Malleusocoris, a new South American genus of Myodochini (Hemiptera, Rhyparochromidae) with modified antennae, along with some new synonymies and new combinations for misplaced taxa

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Abstract

The new monotypic genus *Malleusocoris* is described to accommodate the new species *M. minimus* **sp. nov.** from Argentina and Brazil. Its relationship with other genera of the tribe Myodochini (Hemiptera: Rhyparochromidae) is discussed. Moreover, the taxonomic allocation of *Ptochiomera chilensis* Spinola, 1852 and *Plociomera annulicollis* Berg, 1894 are discussed. *Ptochiomera chilensis* Spinola, 1852 is considered a junior synonym of *Bergidia polychroma* (Spinola, 1852) (Ozophorini); and *Plociomera annulicollis* Berg, 1894 is transferred to the genus *Neopamera* Harrington, 1980.

Key Words

Lectotype, Neotropical, new species, *M. minimus*, Spinola

Introduction

Myodochini is the most diverse tribe of Rhyparochromidae in the Neotropical Region with many taxa still to be described (Dellapé and Coscarón 2005; Dellapé 2012; Dellapé et al. 2016). Most of the members of the tribe are found on the ground, living in litter below plants, although some species climb vegetation to feed on mature seeds, others live above ground on weedy vegetation and a few species are known to be arboreal (Cervantes and Pacheco 2003, 2006; Dellapé and Henry 2010).

Henry et al. (2015) noted the need to re-evaluate the placement of three species assigned to the genera *Pseudocnemodus* Barber, *Ptochiomera* Say, and *Sisamnes* Distant. Dellapé and Melo (2019) transferred *Pseudocnemodus martinezi* Brailovsky to *Bergicoris* Dellapé, leaving *Pseudocnemodus* Barber as a monotypic Nearctic genus. The remaining two misplaced species are treated here: *Ptochiomera chilensis* Spinola, 1852 is considered a junior synonym of *Bergidia polychroma* (Spinola, 1852) (Ozophorini), and *Plociomera annulicollis* Berg, 1894, is transferred to the genus *Neopamera* Harrington, 1980.

Furthermore, a new myodochini genus is described to accommodate a new species from Argentina and Brazil. Its relationship with other genera of the tribe is discussed.

Materials and methods

The acronyms used are **NMPC** for the National Museum, Prague, Czech Republic, and **MLP** for the Museo de la Plata, La Plata, Argentina.

Spinola's type specimens of species described in Gay's work "Historia Física y Política de Chile" (1844–1871) were examined by images taken and sent to us by the curator of the Museo Regionale di Scienze Naturali di Torino (Italy). The labeling of the species and specimens is poor and there is no indication of type specimens. We followed the ICZN rules to select lectotypes and to identify holotypes.

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Label data are cited verbatim. Lines on labels are separated with '/', contents of different labels are separated with '//'.

Color images of new taxa were captured with a Canon EOS Rebel T7i with a Professional Grade Raynox DCR 150 DSLR Objective Tube Lens and an Objective PLAN Achromatic LWD infinity 5×, mounted on a WeMacro's automatic focus stacking rail. Multiple focal planes were taken with HELICON REMOTE software and merged using HELICON FOCUS software. Plates were created and numbered in COREL DRAW 2020.

Measurements were taken using a millimetric ocular and are given in millimeters.

Lsid links to the world catalog Lygaeoidea Species File http://lygaeoidea.speciesfile.org/ (Dellapé and Henry 2023) are provided.

Results

Taxonomy

Family Rhyparochromidae
Subfamily Rhyparochrominae
Tribe Myodochini

Malleusocoris gen. nov.

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Figs 1–5, Table 1

World catalog Lygaeoidea Species File link. http://lsid.speciesfile.org/urn:lsid:Lygaeoidea.speciesfile.org:TaxonName:519162.

Type species. *Malleusocoris minimus* Dellapé & Melo, sp. nov.

Diagnosis. Small. Antenna capitate, basiflagellomere shortest, distiflagellomere conspicuously enlarged; forefemur with a single inner row of spines.

Description. Body length less than 3.5 mm. Dorsum shiny. Antenna capitate, basiflagellomere shorter than scape, distiflagellomere conspicuously enlarged. Juga rounded. Eyes relatively small, not surpassing dorsal margin of head in lateral view; vertex rounded; postocular region of head shorter than interocellar distance. Ocelli closer to posterior margin of head than to eyes, located before an imaginary line passing across the posterior border of eyes. Ventral surface of head with a median groove; buccular juncture U-shaped, placed in a groove close to labial insertion. Pronotum coarsely punctate, punctures larger on posterior pronotal lobe. Lateral margins of anterior pronotal lobe rounded; lateral margins of posterior lobe carinate, carina broader on posterior half; a distinct anterior collar present but not demarked posteriorly by a linelike groove. Claval punctures arranged in three regular rows. Mesepimeron enclosed. Evaporative area reduced. Forecoxa with a small spine. Forefemur with a few tiny spines restricted to inner row; male foretibia mutic. Posterior margin of dorsal aperture of pygophore broadly rounded. Aedeagus unspined.

Etymology. The genus name is the combination of the Latin *malleus* (= hammer or mallet) by the incrassate distiflagellomere, and the Greek *koris* (= bug). The gender is masculine.

Table 1. Distribution and summary of material examined of the species of *Malleusocoris* gen. nov. Abbreviations: ARG – Argentina, BR – Brazil.

Type species	Type locality	Distribution	Material examined
M. minimus Dellapé & Melo **sp. nov.**	Mato Grosso, Pantanal, 25 km S of Poconé, Pousada Farm São Cristovão (BR)	ARG, BR	5 males, 8 females

Figure 1. *Malleusocoris minimus* gen. nov., sp. nov. Habitus of male holotype. Scale bar: 1 mm.

Malleusocoris minimus sp. nov.

https://zoobank.org/AABC95F6-3347-4B66-A7B6-E4F684F59C47

Figs 1–5

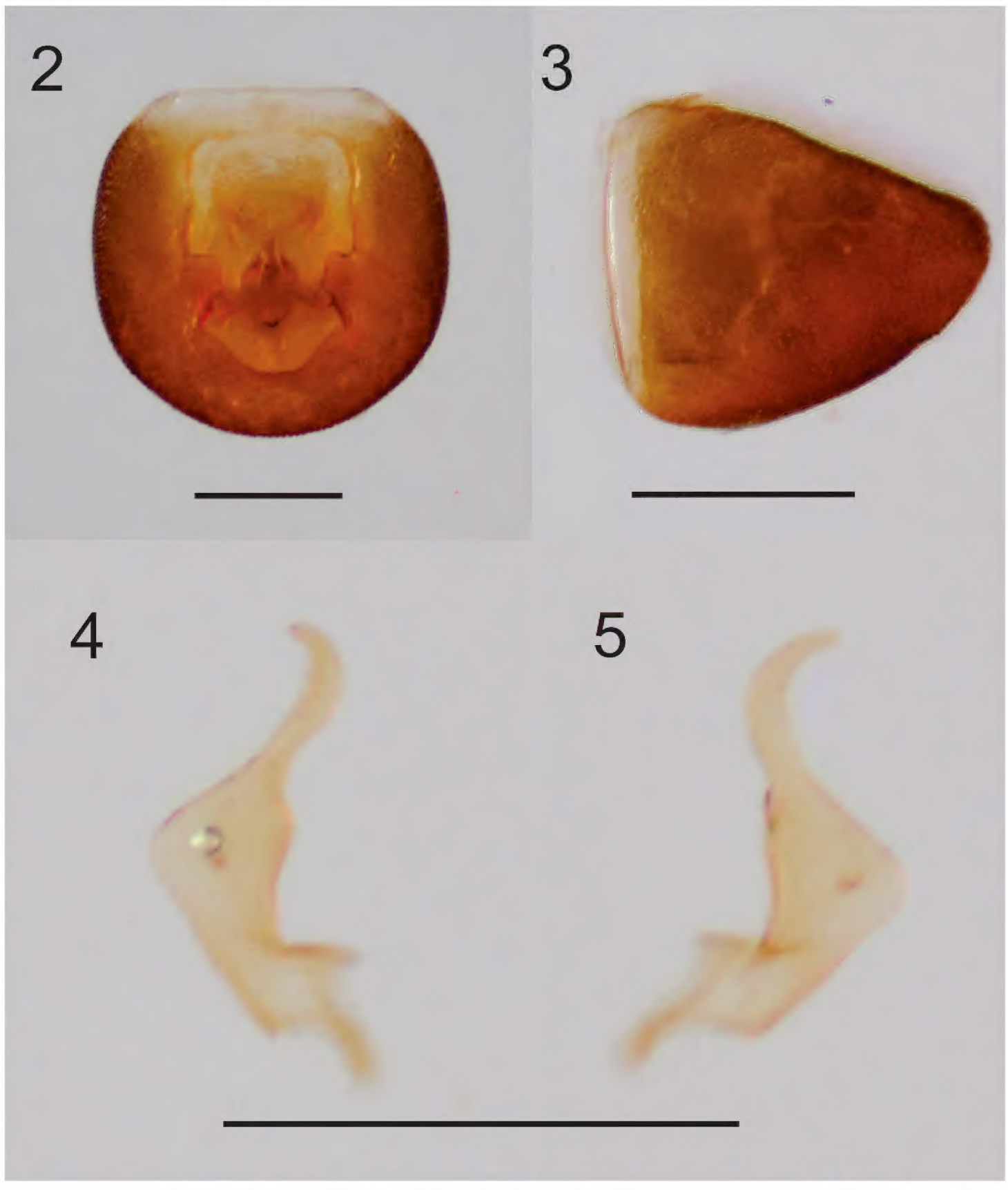
World catalog Lygaeoidea Species File link. http://lsid.speciesfile.org/urn:lsid:Lygaeoidea.speciesfile.org:TaxonName:519163.

Type material. ***Holotype*** ♂ (Fig. 1), Brazil, Mato Grosso / State Pantanal / 25 km. S of Poconé // Pousada form / SAO Cristovao / 29.8.2000 lgt J. Růžička // MLP / HE-10661 (MLP); ***paratypes*** 1 ♂ 2 ♀♀, same data as for

holotype // MLP / HE-10662-10664 (MLP); 1 ♂ 5 ♀♀, same data as for holotype (NMPC); 1 ♀, 29.8.2000 lgt J. Růžička / Pousada form / SAO Cristovao (NMPC); 1 ♂, Brazil, Mato Grosso state, / Pantanal, 20 km. S of Poconé, / Pousada [farm] POUSO ALEGRE, / 30.viii.2000, Jan Růžička leg., B9 // ca. 100 m a.s.l., on light at / evening and night (20.00–23.00 of / local time-GMT/UTC +04.00), / light bulbs near the farm, end of / dry season (NMPC); 1 ♂, Argentina – Misiones / PN Iguazú / X-1980 T. Luz / D.J. Carpintero // MLP / HE-10665 (MLP).

Description. Holotype male (Fig. 1). Total length 2.84. Head length 0.48, head width 0.58, interocular space 0.32, interocellar space 0.18; antennal segments length: scape 0.22, pedicel 0.32, basiflagellomere 0.20, distiflagellomere 0.50, scape width 0.08, distiflagellomere width 0.12. Anterior pronotal lobe length 0.32, width 0.60, posterior pronotal lobe length 0.24, width 0.92.

Head brown, with abundant short, whitish, decumbent setae. Antenniferous tubercles subparallel. ***Antennae***: Scape surpassing apex of head by about half its length; pedicel and basiflagellomere widened distally; scape, pedicel and basiflagellomere light brown, distiflagellomere fusiform and enlarged; much darker and slightly paler apically; with abundant short whitish decumbent setae. ***Labium*** attaining mesosternum, segment I extending to half the length of eyes, remote from prosternum. ***Thorax. Pronotum*** with a faint median carina, more evident on transverse impression. Anterior pronotal lobe brown, posterior lobe paler with five longitudinal darker stripes, median macula reaching transverse impression; with abundant short whitish decumbent setae. ***Scutellum*** with a median carina on posterior half; coarsely punctate; brown with apex whitish; with same setae as on pronotum. ***Hemelytra*** irregularly pale brown, with paler margins interrupted by a pale brown spot at level of apex of claval commissure, apex of corium pale brown; with whitish setae on punctures, shorter than those of head, pronotum and scutellum. ***Legs*** light brown, with short whitish setae. Forefemur with a few minute



Figures 2–5. *Malleusocoris minimus* sp. nov. Male genitalia, of male holotype. **2.** Pygophore, dorsal view; **3.** Pygophore, lateral view; **4.** Right paramere, outer view; **5.** Right paramere, inner view. Scale bars: 0.25 mm.

spines in inner row. ***Abdomen. Male genitalia***: Pygophore (Figs 2, 3) broadly rounded in dorsal view, aperture quadrangular anterior to the sub-quadrangular inner projections; declivent posteriorly in lateral view. Parameres (Figs 4, 5) with long and curved blade. ***Aedeagus*** weakly sclerotized, conjunctiva and vesica unspined, ejaculatory reservoir well developed, wings well projected laterally.

Paratypes similar to holotype.

Paratypes' measurements (min–max, mean). Males (n = 3): Total length 2.76–2.84, 2.80. Head length 0.46–0.50, 0.49, head width 0.56–0.60, 0.58, interocular width 0.30–0.32, 0.31, interocellar width 0.18–0.20, 0.19. Antennal segments length: scape 0.20–0.22, 0.21, pedicel 0.30–0.34, 0.32, basiflagellomere 0.18–0.20, 0.19, distiflagellomere 0.42–0.48, 0.46; scape width 0.06–0.08, 0.07, distiflagellomere width 0.12. Anterior pronotal lobe length 0.30–0.34, 0.31, width 0.60–0.66, 0.63; posterior pronotal lobe length, 0.26–0.28, 0.27; width 0.90–0.96, 0.93.

Females (n = 5): Total length 2.92–3.32, 3.11. Head length 0.48–0.56, 0.54, head width 0.62–0.64, 0.64, interocular width 0.34–0.36, 0.34, interocellar width 0.20–0.24, 0.21. Antennal segments length: scape 0.22–0.26, 0.24, pedicel 0.32–0.38, 0.34, basiflagellomere 0.18–0.20, 0.19, distiflagellomere 0.48–0.50, 0.49; scape width 0.08, distiflagellomere width 0.12–0.14, 0.13. Anterior pronotal lobe length 0.30–0.38, 0.34, width 0.66–0.72, 0.69; posterior pronotal lobe length, 0.28–0.30, 0.29; width 1.00–1.08, 1.03.

Etymology. The specific epithet *minimus* is an adjective and refers to the small size of this new species.

Distribution. Brazil, Mato Grosso, Pantanal; and Argentina, Misiones, PN Iguazú.

Synonymic notes and lectotype selection

Henry et al. (2015) noted the need to study the identity and taxonomic placement of the Neotropical *Ptochiomera chilensis* Spinola, 1852 and *Plociomera annulicollis* Berg, 1894, currently *Sisamnes annulicollis*.

We examined photographs of the type specimens of *Ptochiomera chilensis* (Spinola, 1852) deposited in the Museo Regionale di Scienze Naturali di Torino (Figs 6–8). All the specimens are brachypterous and have the typical spines on ozophorine profemora. Among the six syntypes, four males and two females, the male specimen of *Ptochiomera chilensis* indicated with an arrow in figure 6 is selected as the lectotype, leaving the other five specimens as paralectotypes. The following red label will be required to be attached to the specimen: "*Pachymerus chilensis* Spinola, 1852, Lectotype designated by Dellapé & Melo 2023" (Figs 7, 8); paralectotypes should also be labeled according to their new condition.

Additionally, we were able to examine photographs of the female holotype of *Pachymerus polychromus* Spinola, 1852, also deposited in the Museo Regionale di Scienze Naturali di Torino (current combination *Bergidia polychroma* (Ozophorini) http://lsid.speciesfile.org/urn:lsid:Lygaeoidea.speciesfile.org:TaxonName:481821). Although the specimen is macropterous and lacks the abdomen and antennae, the general morphology and coloration of the pronotum and hemelytra agree with specimens of *P. chilensis*. Microptery is the most common condition in the species, whereas macropterous forms are rare, as noted by Ashlock (1985), who found only two fully winged individuals among 165 specimens. After examining photographs of the type specimens of both names and studying the additional specimens of *B. polychroma* deposited at the MLP, we consider *P. chilensis* a junior synonym (syn. nov.) of *Bergidia polychroma* (Spinola, 1852) (Ozophorini). This specimen should be labeled as *Pachymerus polychromus* Spinola, 1852, Holotype.

Casale (1981) catalogued Spinola's Hemiptera collection, and according to his records, the specimens we examined correspond to the type material of both species. We noted that all specimens described by Spinola under the genus *Pachymerus* are labeled in the genus *Aphanus*.

According to Ashlock and Slater (1982) *Bergidia polychroma* is among the most common rhyparochromids (as Lygaeidae) in Chile. But it is also known from the Argentinean Patagonia, from the provinces of Neuquén, Rio Negro and Tierra del Fuego (Ashlock 1985; Dellapé 2014; Dellapé et al. 2023 [https://biodar.unlp.edu.ar/pentatomomorpha/en/info/20217.html]).

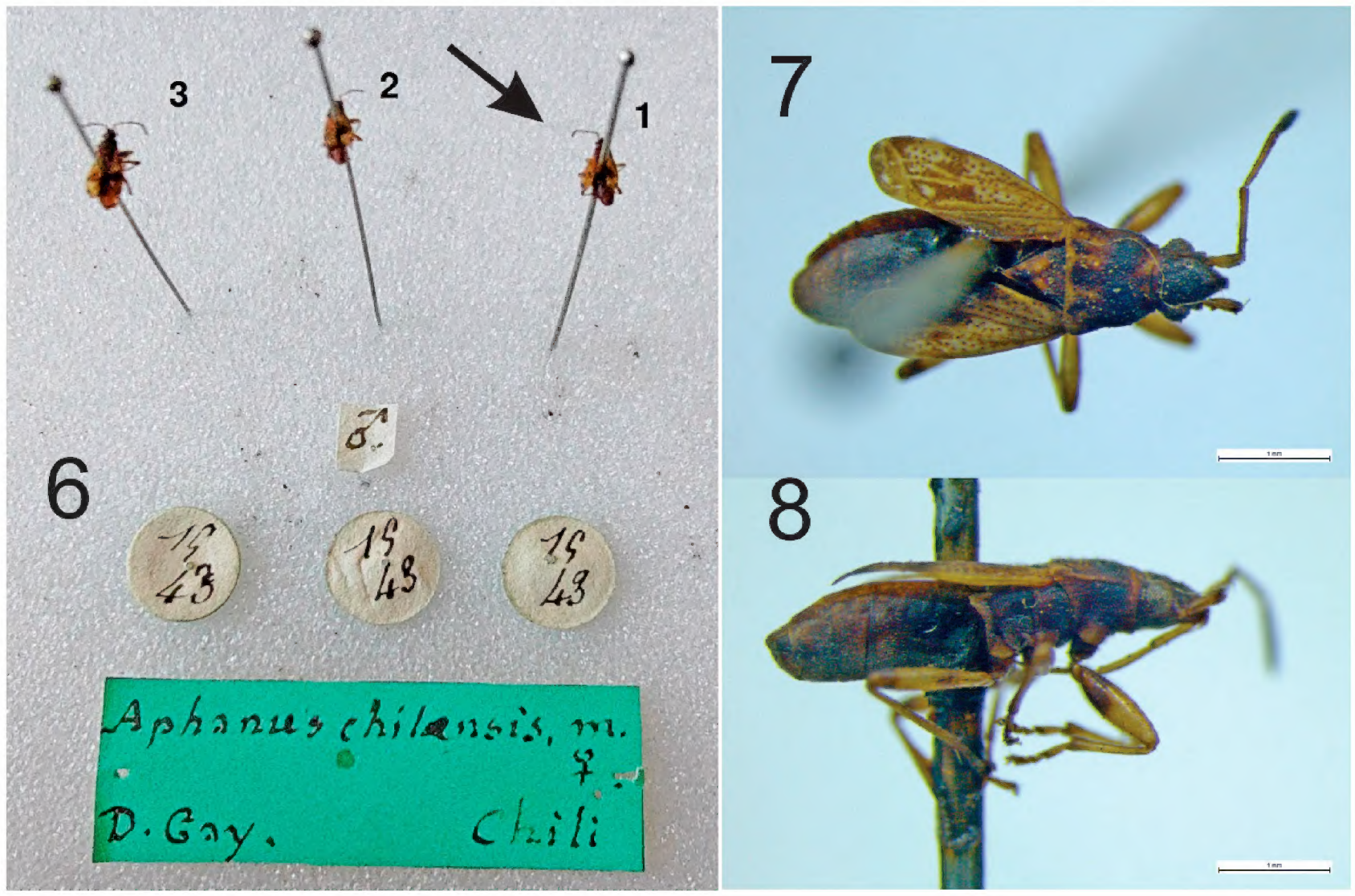
We also studied the female holotype of *Plociomera annulicollis* Berg, 1894 deposited in MLP and found that it belongs in the genus *Neopamera* Harrington 1980, establishing the new combination *Neopamera annulicollis* (Berg) comb. nov. The poorly conserved specimen has the right pedicel, the protarsi, the left mesofemur, and the right metatibia missing; it shows a flat vertex, a postocular region of head shorter than the interocellar distance, with the ocelli located closer to posterior margin of head than to the eyes, both pronotal lobes rounded laterally, a collar demarked posteriorly, claval punctation in four or more rows, the buccular juncture V-shaped, the mesepimeron emergent, and an extensive evaporative area, which indicates that the best placement for this species is in the genus *Neopamera*. The whitish subbasal annulus on the distiflagellomere relates this species with *Neopamera albocincta* (Barber, 1952).

Thereby, the genus *Ptochiomera* with only one included species, *P. nodosa* Say, 1832, is restricted to the Nearctic, and *Sisamnes* Distant, 1893, with two species, *S. claviger* (Uhler, 1895) and *S. contractus* Distant, 1893, are mostly Nearctic species, with *S. contractus* also known from Guatemala.

Discussion

The placement of abdominal spiracles II–IV dorsally on the laterotergites, with the rest located sternally, and the absence of inner laterotergites, indicate that *Malleusocoris minimus* gen. nov. and sp. nov. belongs to the tribe Myodochini.

The monotypic myodochine genus *Ptochiomera* Say, 1832, *Carpilis* Stål, 1874 with three species, and the genus *Sisamnes* with two species, exhibit different conditions



Figures 6–8. *Pachymerus chilensis* Spinola, 1852. **6.** Male syntype specimens. Arrow indicates de specimen selected as lectotype; **7, 8.** Male lectotype, here designated; **7.** Dorsal view; **8.** Lateral view. Scale bars: 1 mm.

of thickened antennae. These taxa are restricted to the Nearctic Region, except *S. contractus* also known from Guatemala (see "Synonymic notes and lectotype selection"). Harrington (1980) mentioned that according to field observations *Carpilis* and *Sisamnes* specimens used their antennae for righting the insect when it had been turned its back. *Malleusocoris* gen. nov. is the first myodochine genus with an enlarged distiflagellomere among the South American fauna. Most specimens were collected in the Pantanal, Brazil, one of the largest wetlands in the world located in Mato Grosso and Mato Grosso do Sul states in Brazil and a small portion in Bolivia and Paraguay (Heckman 1998), and a single male in the Iguazú National Park in Misiones Province, Argentina; the park protects a large area of the Paraná Forest that constitutes a significant remnant of the Atlantic Forest, one of the largest and most threatened tropical rainforests in the world (Dellapé et al. 2015; Melo et al. 2017). The capitate antennae together with its small size are striking characters of this new species. Their total length among 2.92–3.32 mm in females and among 2.76–2.84 mm in-males, makes *Malleusocoris minimus* sp. nov. one of the smallest known myodochines.

Nothing is known about the biology or host plants of this new species. Regarding the other myodochine taxa with which it shares similarities, Scudder (1993) has found *Sisamnes claviger* to be abundant in the *Purshia* sp. (Rosaceae) and *Artemisia tridentata* Nutt. (Asteraceae) communities in the south Okanagan of British Columbia. Wheeler (2017) collected *Ptochiomera nodosa*, *Carpilis barberi* (Blatchley, 1924) and both *Sisamnes* species on *Eragrostis curvula* [Schrad.] Nees. "weeping lovegrass" (Poaceae), an African bunchgrass planted extensively in the southern United States, growing in open, disturbed, dry habitats; with mostly sandy soils. He also collected these species (excepting *S. claviger*) from crowns of native grasses of bunched growth habit; and *Carpilis barberi* was additionally collected from crowns of other graminoid families: Cyperaceae (sedges) and Juncaceae (rushes) (Wheeler 2017).

Author contribution

MCM and PMD contributed equally to the preparation and writing of the manuscript.

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The authors have declared that no competing interests exist.

References

Ashlock PD (1985) A Revision of the *Bergidea* group: A problem in Classification and Biogeography (Hemiptera-Heteroptera: Lygaeidae). Journal of the Kansas Entomological Society 57: 675–688. https://www.jstor.org/stable/25084577

Ashlock PD, Slater JA (1982) A Review of the Genera of Western Hemisphere Ozophorini with Two New Genera from Central America (Hemiptera-Heteroptera: Lygaeidae). Journal of the Kansas Entomological Society 55: 737–750. https://www.jstor.org/stable/25084355

Barber HG (1952) The genus *Pachybrachius* in the United States and Canada with the description of two new species (Hemiptera: Lygaeidae). Journal of the New York Entomological Society 60: 211–220.

Blatchley WS (1924) Some apparently new Heteroptera from Florida. Entomological News 35: 85–90.

Berg C (1894) Descripciones de algunos Hemípteros Heterópteros nuevos o poco conocidos. Anales del Museo Nacional de Montevideo 1(1): 13–27.

Casale A (1981) Cataloghi. II. Collezione Emitterologica di Massimiliano Spinola. Museo Regionale di Sciemze Naturali, Torino, Italy, 120 pp.

Cervantes PL, Pacheco RI (2003) Biology and description of a new species of *Cholula* (Heteroptera: Rhyparochromidae: Myodochini) associated with a fig in Mexico. Journal of the New York Entomological Society 111: 41–47. https://doi.org/10.1664/0028-7199(2003)111[0041:BADOAN]2.0.CO;2

Cervantes PL, Pacheco RI (2006) Biología y descripción de los estadios ninfales de *Cholula maculatus* Distant (Hemiptera: Heteroptera: Lygaeoidea: Rhyparochromidae: Myodochini). Acta Zoología Mexicana (n. s.) 22: 67–73. https://doi.org/10.21829/azm.2006.2232024

Dellapé PM (2012) A new genus and two new species of Neotropical Myodochini (Hemiptera: Heteroptera: Rhyparochromidae). Revista Mexicana de Biodiversidad 83: 51–56. https://doi.org/10.22201/ib.20078706e.2012.1.722

Dellapé PM (2014) Lygaeoidea. In: Roig-Juñent S, Claps LE, Morrone JJ (dirs.) Biodiversidad De Artrópodos Argentinos (Volumen 3), 421–438. Editorial INSUE - UTN, Argentina, 564 pp. [ISBN: 978-950-554-904-7]

Dellapé PM, Coscarón MC (2005) Redescription of *Pseudoparomius linearis* Stål, and descriptions of three new species of *Pseudoparomius* Harrington (Rhyparochromidae: Heteroptera). Zootaxa 909: 1–12. https://doi.org/10.11646/zootaxa.909.1.1

Dellapé PM, Henry TJ (2023) Lygaeoidea Species File. Version 5.0/5.0. http://Lygaeoidea.SpeciesFile.org [Accessed January 2023]

Dellapé PM, Henry TJ (2010) *Acrolophyses*, a new seed bug genus and two new species (Hemiptera: Heteroptera: Rhyparochromidae: Myodochini) from forest-canopy fogging in Ecuador and Peru. Insect Systematics and Evolution 41: 75–89. https://doi.org/10.1163/187631210X487002

Dellapé PM, Melo MC (2019) A New Combination in the Genus *Bergicoris* (Heteroptera: Rhyparochromidae: Myodochini), with Distributional Data for Some Species. Proceedings of the Entomological Society of Washington 121(2): 311–313. https://doi.org/10.4289/0013-8797.121.2.311

Dellapé PM, Melo MC, Montemayor SI, Dellapé G, Brailovsky H (2015) Terrestrial Heteroptera (Hemiptera) from Moconá Provincial Park (Misiones, Argentina). CheckList 11(3): 1662[18 pp]. https://doi.org/10.15560/11.3.1662

Dellapé PM, Melo MC, Henry TJ (2016) A phylogenetic review of the true bug genus *Heraeus* (Hemiptera: Rhyparochromidae: Myodochini), with the description of two new genera and 30 new species. Zoological Journal of the Linnean Society 177(1): 29–134. https://doi.org/10.1111/zoj.12348

Dellapé PM, Melo MC, Dellapé G, Olivera L (2023) Pentatomomorpha (Hemiptera: Heteroptera) species from Argentina and Uruguay. https://biodar.unlp.edu.ar/pentatomomorpha/ [Accessed Jan 2023]

Distant DL (1893) Insecta. Rhynchota. Hemiptera- Heteroptera. Vol. 1. In: Godman, Salvin (Eds) Biologia Centrali-Americana. London, 369–462.

Harrington BJ (1980) A generic level revision and cladistic analysis of the Myodochini of the world (Hemiptera, Lygaeidae, Rhyparochrominae). Bulletin of the American Museum of Natural History 167: 49–116. http://hdl.handle.net/2246/437

Heckman CW (1998) The Pantanal of Poconé. Biota and ecology in the northern section of the world's largest pristine wetland. Kluwer Academic Publishers, Dordrecht, Netherlands, 624 pp.

Henry TJ, Dellapé PM, de Paula A (2015) The Big-Eyed Bugs, Chinch Bugs, and Seed Bugs (Lygaeoidea). In: Panizzi A, Grazia J (Eds) True Bugs (Heteroptera) of the Neotropics. Springer Publishing Co., England and USA, 459–514. https://doi.org/10.1007/978-94-017-9861-7_16

Melo MC, Dellapé G, Olivera L, Varela PS, Montemayor SI, Dellapé PM (2017) Diversity of true bugs from Iguazú National Park, Argentina. CheckList 13(5): 479–511. https://doi.org/10.15560/13.5.479

Say T (1832) Descriptions of new species of heteropterous Hemiptera of North America. New Harmony, Indiana, 39 pp.

Scudder GGE (1993) Geographic distribution and biogeography of representative species of xeric grassland-adapted Nearctic Lygaeidae in western North America (Insecta: Heteroptera). Memoirs of the Entomological Society of Canada 165: 75–113. https://doi.org/10.4039/entm125165075-1

Spinola MM (1852) Orden VII. Hemípteros. In: Gay C. Historia Física y Política de Chile. Maulde and Renou, Paris, Zoologia 7: 113–320.

Stål C (1874) Enumeratio Hemipterorum. Bidrag till en företeckning öfver alla hittills kända Hemiptera, jemte systematika meddelanden. Kongliga Svenska Vetenskaps- Akademiens Handlingar Part 4, 12(1): 1–186.

Uhler PR (1895) Description of new genera and species of Hemiptera. In: Gillette GP, Baker CF (Eds) A preliminary list of the Hemiptera of Colorado. Colorado Agricultural Station Bulletin 31 (Technical Series 1), 137 pp.

Wheeler Jr AG (2017) Myodochine Seed Bugs (Hemiptera: Rhyparochromidae) from crowns of an African Bunchgrass, *Eragrostis curvula* (Poaceae), Native Grasses, and other Tussock- Forming Graminoids (Cyperaceae, Juncaceae) in the southern United States. Proceedings of the Entomological Society of Washington 119(1): 130–141. https://doi.org/10.4289/0013-8797.119.1.130